YOUNGSHIK KIM, Ph.D.

ASSOCIATE PROFESSOR
MECHANICAL ENGINEERING
HANBAT NATIONAL UNIVERSITY
DAEJON, 305-719, KOREA
PHONE: 82-42-821-1163
youngshik@hanbat.ac.kr
URL: http://robot.hanbat.ac.kr

Education

Doctor of Philosophy, Mechanical Engineering
University of Utah, Salt Lake City, UT, Coursework GPA: 4.0/4.0, 2008
- Dissertation: "Kinematic Motion Control of Compliantly Coupled Multi-Robot Systems Subject to Physical Constraints," August 2008, Advisor: Dr. Mark A. Minor.

Master of Science, Mechanical Engineering
University of Utah, Salt Lake City, UT, Coursework GPA: 3.91/4.0, 2003
- Thesis: "Control Prototyping System: From DSP to Microcontroller (Case Study: Throwing Robot Arm)," May 2003, Advisor: Dr. Mark A. Minor.

Bachelor of Engineering, Mechanical Engineering
Inha University, Inchon, Korea, GPA: 3.52/4.0, Rank: 10/216, 1996
- Concentrations in System Dynamics, Modeling, Mechanics and FEM/Computational Methods.

Professional Experience

Associate Professor
Hanbat National University, Daejon, Korea, 2011 – Present

Senior Researcher
Daegu Gyengbuk Institute of Science and Technology (DGIST), Daegu, Korea, 2009 – 2011
- Biologically Inspired Robots

Deputy Director (5th ranked government officer)
Defense Acquisition Program Administration, Seoul, Korea, 2009

Postdoctoral Researcher
Robotics System Laboratory, Mechanical Engineering, University of Utah, August 2008 – March 2009
- Calibration-less trailer backing

Robotics Instructor
Juan Diego Catholic High School, Draper, Utah, August 2008- December 2008

Research Assistant
Robotics System Laboratory, Mechanical Engineering, University of Utah, 2001 – 2008
- DARPA URBAN CHALLENGE 2007
- Nonholonomic control and motion planning: funded by NSF
- A ball-throwing robot arm: funded by University of Utah
- Proposal Written: "Traction control, planning, and localization for terrain sensing mobile robots"
  - Collaborated with the advisor to submit proposals to NSF.
- Student Mentoring

Guest Lecturer
Mechanical Engineering, University of Utah
- Nonlinear Controls (ME7200, graduate course), taught some fundamental properties and Lyapunov stability theorem, September 2008.
- Mechatronics II (ME3210, undergraduate course), taught stability and steady state errors, March 2008.
- Advanced Modeling and Controls (ME6200, graduate course), taught frequency response and Bode plots, November, 2004.

Teaching Assistant
Mechanical Engineering, University of Utah
- Mechatronics (ME3200 & 3210, undergraduate course), Fall 2007- Spring 2008
- Engineering Design and Visualization (ME1000, undergraduate course), Fall 2006
- Robot Controls (ME6960-004, senior and graduate course), Spring 2005

Graduate Assistant
Mechanical Engineering, University of Utah, August 2001 - May 2003
- Mechatronics I & II (ME3200 & 3210), Advanced Modeling and Controls (ME6200), State Space Methods (ME6210)

Tutor
Tutoring Center, University of Utah, 2001
- Taught computer essentials: MS OFFICE (Word, Excel, PowerPoint, Access, and FrontPage).

Assistant Engineer
Calibration Service Center, Korea Research Institute of Standards and Science (KRISS), Daejon, Korea, February-August 2000

Publications

Journal Articles (SCI/SCIE indexed)

1. Bu Hyun Shin, Taesoo Jang, Bong-Jo Ryu, Youngshik Kim, A Modular Torsional Actuator Using Shape Memory Alloy Wires," *Journal of Intelligent Material Systems and Structures*, doi:1045389X15600084, 2015.

2. Youngshik Kim, "Motion state estimation for an autonomous vehicle-trailer system using Kalman filtering-based multisensor data fusion," *ASIA LIFE SCIENCES*, SUPPLEMENT 11 (Bioscience and Medical Research: Contributions 2: The Convergent Research Society Among Humanities, Sociology, Science & Technology), pp. 79-90, 2015.

3. Kyung-min Lee, Youngshik Kim, Jamie K. Paik, and Buhyun Shin, "Clawed Miniature Inchworm Robot Driven by Electromagnetic Oscillatory Actuator," Journal of Bionic Engineering, Vol. 12, Issue 4, pp. 519–526, 2015.

4. Youngshik Kim and Mark A. Minor, "Coordinated Kinematic Control of Compliantly Coupled Multi-Robot Systems in an Array Format," *IEEE Transactions on Robotics,* Vol. 26, Issue 1, pp. 173-180, 2010.

5. Youngshik Kim and Mark A. Minor, "Distributed Kinematic Motion Control of Multi-Robot Coordination Subject to Physical Constraints," *International Journal of Robotics Research*, Vol. 29, Issue 1, pp. 92-109, 2010.

6. Xiaorui Zhu, Youngshik Kim, Roy Merrell and Mark A. Minor, "Cooperative Motion Control and Sensing Architecture in Compliant Framed Modular Mobile Robots," *IEEE Transactions on Robotics*, Vol. 23, Issue 5, pp. 1095-1101, 2007.

7. Youngshik Kim and Mark A. Minor, "Path Manifold Based Kinematic Control of Wheeled Mobile Robots Considering Physical Constraints," *International Journal of Robotics Research,* Vol. 26, Issue 9, pp. 955-975, 2007.

Journal Articles (Scopus indexed)

1. Youngshik Kim, "Investigation of Parameter Estimation of a Car-Trailer System Using Condition Numbers." International Journal of Software Engineering and Its Applications, Vol.8, No.5, pp.231-242, 2014.

2. Bu Hyun Shin, Kyung-min Lee, and Youngshik Kim, "Miniaturized Dual Electromagnetic Oscillatory Actuator for Legged Locomotion of Micro Mobile Robots" International Journal of Control and Automation, Vol.7, No.8, pp.245-256, 2014.

Journal Articles (Korean and others)

1. 장태호, 김영식, "차량 탑재형 안테나 포지셔너의 반사판 지지대 최적설계 (Design Optimization of Support Frame of Antenna Positioner Mounted on a Vehicle)," 한국정밀공학회지(Journal of the Korean Society of Precision Engineering), v.31 no.5 , pp.411 - 416 , 2014. (연구재단 등재지)

2. 장태호, 김영식, "모바일 로봇 모션 제어에 있어 샘플링 시간의 효과 (Effects of the Sampling Time in Motion Controller Implementation for Mobile Robots)," 한국산업경영시스템 학회지(Journal of Society of Korea Industrial and Systems Engineering), vol. 37 no. 4, pp.154 - 161, 2014. (연구재단 등재지)

3. Youngshik Kim, Dong-Hwan Shin, "Running Model for a Compliant Wheel-Leg Hybrid Mobile Robot by Using a Mass-Spring Model," Applied Mechanics and Materials, Volumes 110 - 116, pp. 2762-2767, 2012.

International Conference Articles

The following publications reflect competitive peer reviewed conference with low acceptance rates (typically 40~60%):

1. Youngshik Kim and Mark A. Minor, "Coordinated Kinematic Motion Control of Compliant Framed Modular Wheeled Mobile Robots," Proc. *2008 IEEE/RSJ International Conference on Intelligent Robots and Systems,* Nice, France, 22-26 September, 2008.

2. Youngshik Kim and Mark A. Minor, "Kinematic Motion Control of Wheeled Mobile Robots Considering Curvature Constraints," Proc. *2008 IEEE International Conference on Robotics and Automation*, Pasadena, CA, USA, 19-23 May, pp. 2527 - 2532, 2008.

3. Youngshik Kim and Mark A. Minor, "Decentralized Kinematic Motion Control for Multiple-Axle Compliant Framed Modular Wheeled Mobile Robots," Proc. *2006 IEEE/RSJ International Conference on Intelligent Robots and Systems*, Beijing, China, 9-15 October, pp. 392 – 397, 2006.

4. Youngshik Kim and Mark A. Minor, "Bounded Smooth Time Invariant Motion Control of Unicycle Kinematic Models," Proc. *2005 IEEE International Conference on Robotics and Automation*, Barcelona, Spain, 18-22 April, pp. 3676 -81, 2005.

5. Mark A. Minor, Kent Jensen, and Youngshik Kim, "Design and Control of a Three-Link Serial Manipulator for Lessons in Particle Dynamics," Proc. *2002 IEEE International Conference on Robotics and Automation*, Washington DC, USA, 11-15 May, Vol. 4, pp. 3435-41, 2002.

6. Xiaorui Zhu, Youngshik Kim and Mark A. Minor, "Cooperative Distributed Robust Control of Modular Mobile Robots with Bounded Curvature and Velocity," Proc. *2005 IEEE/ASME International Conference on Advanced Intelligent Mechatronics*, Monterey, California, USA, 24-28 July, pp. 1151-57, 2005.

The following publications' acceptance rates are not announced:

1. Bu Hyun Shin, Youngshik Kim, and Bongjo Ryu, "2-DoF Electromagnetic Actuator," Proceedings of the 6th International Conference on Manufacturing, Machine Design and Tribology (ICMDT), Okinawa, Japan, April 22-25, pp. 472-473, 2015.

2. Youngshik Kim and Junsul Kim, "Linear Kinematic Model-based Least Squares Methods for Parameter Estimation of a Car-Trailer System Considering Sensor Noises," 2014 Fifth International Conference on Information Science and Applications, Seoul, Korea, 6–9 May 2014.

3. Youngshik Kim, "Condition number for Parameter Estimation of a Car-Trailer System," Proceedings of 2014 International Workshop on Mobile and Wireless, Jeju, Korea, April 15-18, 2014.

4. Shin, Bu Hyun, Kyung-min Lee, and Youngshik Kim. "Miniaturized Dual Electromagnetic Oscillatory Actuator." Proceedings of 2014 International Workshop on Mobile and Wireless, Jeju, Korea, April 15-18, 2014.

5. Youngshik Kim. "Path Curvature Sensing Methods for a Car-like Robot," Proceedings of 2014 International Workshop on Mobile and Wireless, Jeju, Korea, April 15-18, 2014.

6. Bong-Jo Ryu and Youngshik Kim, "COMPARISION OF COMPLIANT ONE-SEGMENTED AND TWO-SEGMENTED LEG DYNAMICS FOR A WHEEL-LEG HYBIRD MOBILE ROBOT USING A MASS-SPRING MODEL," Proceedings of 15TH ASIA PACIFIC VIBRATION CONFERENCE, Jeju, Korea, May 29-31, pp. 235-240,-2013.

7. Bong-Jo Ryu, Kil-Young Ahn, and Youngshik Kim "DEVELOPMENT OF A MOLDED CASE CIRCUIT BREAKER WITH A SPRING-ACTUATED LINKAGE BASED ON MULTI-BODY

DYNAMICS ANALYSIS," Proc. of International Conference on Manufacture Engineering, Quality and Production System, Hong Kong, Feb. 27-28, 2013.

8. Bong-Jo Ryu, Hee-Jung Kim, and Youngshik Kim, "DYNAMIC RESPONSE AND VIBRATION OF A CANTILEVERED BEAM UNDER AN ACCELERATED MOVING MASS," Proc. of International Conference on Manufacture Engineering, Quality and Production System, Hong Kong, Feb. 27-28, 2013.

9. Bong-Jo Ryu, Youngshik Kim, Kyeong-Rok Ha, Nam-Kyu Park, and Kyeong-Lak Jeon, "VIBRATION CHARACTERISTICS OF A FUEL ROD DE-PENDING ON SPRING STIFFNESS VARIATIONS OF SPACER GRIDS," Proceedings of 19TH INTERNATIONAL CONGRESS ON SOUND AND VIBRATION, VILNIUS, LITHUANIA, July 08-12, 2012.

10. Bong-Jo Ryu, Youngshik Kim, Jin-Kyu Kang, Boo-Jin Oh, and Young-Sik Yoon, "SEMI-ACTIVE VIBRATION CONTROL OF A RAIL-TRACK SUPPORTED BY DISCRETE SPRINGS AND MAGNETO- RHEOLOGICAL DAMPERS UNDER A TRAVELLING MASS," Proceedings of 19TH INTERNATIONAL CONGRESS ON SOUND AND VIBRATION, VILNIUS, LITHUANIA, July 08-12, 2012.

11. Dong-Hwan Shin, Youngshik Kim, Seungmin Jeong, and Jinung An, "The Mechanical Analysis of a Legged Filed Robot for the Reduction of Longitudinal Mass-drift Amounts," *28th International Symposium on Automation and Robotics in Construction (ISARC2011)*, Seoul, Korea, June 29 - July 2, 2011.

12. Youngshik Kim, Dong-Hwan Shin, and Jinung An, "Running of a Compliant Wheel-Leg Hybrid Mobile Robot by Using a Simple Mass-Spring Model," *2nd International Conference on Mechanical, Industrial, and Manufacturing Technologies (MIMT)*, Singapore, February 2011.

13. Dong-Hwan Shin, Youngshik Kim, Seungmin Jeong, and Jinung An, "Design of a Biologically Inspired Robot Using CAD/CAE/RP," *Int. Conf. Computer-aided Manufacturing and Design (CMD)*, Hong Kong, November 2010.

14. Dong-Hwan Shin, Youngshik Kim and Jinung An, "Effects of torsional stiffness, knee angle, and link ratio on the design of a biologically inspired mobile robot with two-segment legs," *Int. Conf. Control, Automation and Systems (ICCAS)*, Goyan-si, Korea, October 2010.

15. Dong-Hwan Shin, Youngshik Kim, and Jinung An, "Hip-torque limit for no-slop conditions and estimation of frictional coefficients for legged robots," *IASTED Int. Conf. Robotics (ROBO)*, Phuket, Thailand, November 2010.

Korean Conference Articles (Unrefereed)

1. 장태호, 김영식, " Path Manifold 모션 제어기를 적용한 자세 안정화 (Posture Stabilization using a Path Manifold Motion Controller)", 2015 한국지식정보기술학회 춘계 학술대회, 광주, 5월29~230일, 2015.

2. 류봉조, 양윤영, 김영식, 신부현, 김상활, "유체에 잠겨있는 다공 원판의 진동 해석," 2015 한국소음진동공학회 학술대회, 제주도, 4월22일- 4월25일, 2015.

3. 장태수, 김영식, "형상기억합금 와이어 엑추에이터를 적용한 자벌래 로봇 (Inchworm Robot by Using a Shape Memory Alloy Torsional Spring Actuator)," 2015 30회 제어로봇시스 템학회 학술대회(ICROS), 대전 0.5.06-0.5.08, 2015.

4. 신부현, 김영식, "무빙코일 타입의 2 자유도 전자기 구동기 모듈 개발," 2015 30회 제어로봇시스템학회 학술대회(ICROS), 대전 0.5.06-0.5.08, 2015.

5. 장태호, 김영식, 김현태, "선형 및 비선형 DC모터 시스템 모델에 대한 PID 제어기 성능 비교 (Comparison of PID controllers for Linear and Nonlinear Motor System Models)," 2015 30회 제어로봇시스템학회 학술대회(ICROS), 대전 0.5.06-0.5.08, 2015.

6. 장태수, 김영식, "형상기억합금 와이어 액추에이터의 온도 특성 (Temperature Characteristics of a Shape Memory Alloy Wire Actuator)," 한국정밀공학회 2015년도 춘계 학술대회, 제주도, 5월 13일~ 5월 15일, 2015.

7. 장태호, 김영식, 김현태, "DC모터의 시스템 모델링 및 식별 결과 비교 (DC Motor Model-Based Parameter Estimation)," 한국정밀공학회 2015년도 춘계학술대회, 제주도, 5월 13일~ 5월 15일, 2015.

8. 박정진, 장태호, 김영식, "3D Printing 기술을 이용한 일체형 휠-레그 모바일 로봇설계 (3D Printing-based Design of an Integrated Wheel-Leg for a Mobile Robot)," 2015 한국 CAD/CAM학회 동계학술대회, 강원도 평창, 2월 4일~2월 6일, 2015.

9. 이경민, 이승엽, 김영식, 신부현, "전자기 구동기를 이용한 소형 스틱-슬립 이동 메커 니즘," 29회 제어로봇시스템학회(ICROS) 학술대회, 5월 29일~30일, 대구, 2014.

10. 장태호, 김영식, "극 좌표 모션 컨트롤러의 수렴 경로 반경 범위 연구 (A Study on a Converging Path Radius of a Motion Controller derived in Polar Coordinates)," 2014 한국지식 정보기술학회 춘계학술대회, 대전, 5월23~24일, 2014.

11. 장태호, 김영식, "Path Manifold Motion Control 다개체 모바일 로봇 적용 및 결과 분석 (Path Manifold Motion Controller for a Real Multi-Robot and Its Analysis)," 2014 한국지식정 보기술학회 추계학술대회, 대전, 10월31-11월1일, 2014.

12. 박정진, 김영식, "바퀴와 Wheel-Leg를 적용한 모바일 로봇의 주행 비교 (Mobility Comparison of Wheeled and Wheel-Legged Mobile Robots)," 2014 한국지식정보기술학회 추계학술대회, 대전, 10월31-11월1일, 2014.

13. 장태수, 김영식, "형상기억합금 와이어를 응용한 양방향 엑추에이터 (Shape-Memory Alloy Wire-based Duplex Actuator)," 2014 한국지식정보기술학회 추계학술대회, 대전, 10 월31-11월1일, 2014.

14. 박정진, 김영식, 류봉조, "3D Printer를 활용한 Wheel-Leg 설계 및 모바일 로봇에 적용 (Design and Application of Wheel-Legs for a Mobile Robot Using a 3D Printer)," 한국정밀공 학회 2014년도 추계학술대회, 창원, 10월 29일-31일, 2014.

15. 장태호, 김영식, "모바일 로봇 제어를 위한 PID 컨트롤러 설계 (PID Controller Design for Mobile Robot Control)," 한국정밀공학회 2014년도 추계학술대회, 창원, 10월 29일-31일, 2014.

16. 장태수, 김영식, "형상기억합금 와이어를 응용한 양방향 액추에이터 (New Shape-Memory Alloy Wire-based Actuator)," 한국정밀공학회 2014년도 추계학술대회, 창원, 10 월 29일-31일, 2014.

17. 김영식, 문기택, 류봉조, "소금쟁이 로봇의 Wire다리 길이와 적재하중 실험 (Load Experiment by Changing Wire Leg Lengths of a Water Strider Robot)," 한국정밀공학회 2014년도 추계학술대회, 창원, 10월 29일-31일, 2014.

18. 류봉조, 김영식, 양윤영, 김상활, "태양광을 이용한 하이브리드 다개층 식물 생산 시스템," 한국소음진동공학회 학술대회, 목포, 10월 29일-10월 31일, 2014.

19. 김영식, " 최소제곱법 기반 파라미터 추정 알고리즘을 위한 트레일러 로봇 모델 (Trailer Robot Model for Ordinary Least Squares-based Parameter Estimation Algorithm)," 2013 한국지식정보기술학회 추계학술대회, 천안, 11.22-11.23 pp. 135-138, 2013.

20. 장태호, 김영식, " 안테나 포지셔너 방위각 구동 미케니즘 구조 해석 (Structural Analysis of a Mechanism for Driving Azimuth of an Antenna Positioner)," 한국정밀공학회 2013년도 춘계학술대회, 제주도, 05.29-05.31, 2013

21. 장태호, 김영식, "안테나 포지셔너 방위각 구동 미케니즘 설계 (Mechanism Design for Driving Azimuth of an Antenna Positioner)," 한국정밀공학회 2013년도 춘계학술대회, 제주도, 05.29-05.31, 2013

22. 김지웅, 신우창, 박경배, 김영식, "ANSYS를 이용한 컴플라이언스 모바일 로봇 최적 설계에 관한 연구 (Research on Design Optimization for Compliant Mobile Robots Using ANSYS)," 한국정밀공학회 2012년도 추계학술대회, 광주, 10.24-10.26, 2012.

23. 조도연, 장태호, 전상욱, 김영식, "풍속을 고려한 안테나 포지셔너 시스템의 해석과 설계 방안 (Finite Element Analysis and Design Approach for Antenna Positioner Systems Considering Wind Speed)," 한국정밀공학회 2012년도 추계학술대회, 광주, 10.24-10.26, 2012.

24. 박경배, 김영식, "인휠 방식을 적용한 안테나 포지셔너 개념 설계 (Concept Design of an Antenna Positioner Using an In-Wheel Motor System)," 한국정밀공학회 2012년도 추계학술대회, 광주, 10.24-10.26, 2012.

25. 류봉조, 김영식, 임경빈, 윤지환, "화재로 인해 시간 종속 열원에 따른 사장교의 안전성 예측," 2012년도 한국방재학회 학술발표대회, 2012.

26. 류봉조, 오부진, 윤지환, 이규섭, 김효준, 김영식, "주행질량 하의 스프링-댐퍼 이산지지된 보의 동적응답 해석," 한국소음진동공학회 2011년도 춘계학술대회, 강원도, 04.27-04.29, pp. 675-676, 2011.

27. Youngshik Kim, "Mass-Spring Model based Running of Robots with One-Segment and Two-Segment Compliant Legs," *Daejon-Chungchung Conference of Institute of Control and Robot Systems*, December, 2011.

28. Youngshik Kim and Kyungbae Park, "Concept Design of Biologically-Inspired Compliant Frame Links for Mobile Robots," *Daejon-Chungchung Conference of Institute of Control and Robot Systems*, December, 2011.

29. Youngshik Kim, "Trajectory Tracking Control for Backing of a Car-Trailer System," *Proc. Korean Society for Precision Engineering Fall Conference*, October, 2011.

30. Kyungbae Park and Youngshik Kim, "Concept Design of an Automated Coating System for

Expandable Polystyrene Honeybee Hives," *Proc. Korean Society for Precision Engineering Fall Conference*, October, 2011.

31. Youngshik Kim, "Car-Trailer System Identification Using Nonlinear Least Square Techniques," *Proc. Korean Society for Precision Engineering Spring Conference*, May, 2010.

32. Youngshik Kim, Dong-Hwan Shin, Oh Seok Kwon, and Jinung An, "A Leg-Swing Controller for Compliant Legged Robot Running Based on Mass-Spring Model (질량-스프링모델 응용 보행로봇 달리기를 위한 다리 스윙 제어기)," *Proc. Korean Society for Precision Engineering Fall Conference*, November, 2010.

33. Dong-Hwan Shin, Youngshik Kim, Oh Seok Kwon, Donguk Kong, and Jinung An, "A Study of Two Segment Leg for A Biologically Inspired Mobile Robot for Rugged Terrain," *Proc. Korean Society for Precision Engineering Spring Conference*, May, 2010.

34. Seungmin Jeong, Dong-Hwan Shin, Youngshik Kim, and Jinung An, "Leg static guide for impact reduction of robot main body," *Proc. Korean Society for Precision Engineering Fall Conference*, November, 2010.

35. Oh Seok Kwon, Dong-Hwan Shin, Youngshik Kim, and Jinung An, "Design study of 3 segment leg with stable region at low and high speed running," *Proc. Korean Society for Precision Engineering Fall Conference*, November, 2010.

36. Oh Seok Kwon, Youngshik Kim, and Jinung An, "A Study for Locomotion Control of Compliant Legged Robot," *Proc. Korean Society for Precision Engineering Fall Conference*, November, 2010.

37. Dong-Hwan Shin, Seungmin Jeong, Youngshik Kim, and Jinung An, "The mechanism for the reduction of pitch due to acceleration and deceleration of legged robots (다리형 로봇의 가감속에 기인한 Pitch 저감을 위한 메커니즘)," *Proc. Korean Society for Precision Engineering Fall Conference*, November, 2010.

Patent (Registered)

1. 김영식, "두 개의 링크를 갖는 논홀로노믹 로봇의 파라미터 보정 방법 (METHOD FOR PARAMETER CALIBRATION OF TWO-LINK NONHOLONOMIC ROBOTS)," 2015.

2. 김영식, "인휠모터를 이용한 안테나 포지셔너 (POSITIONER FOR AN ANTENNA USING THE IN-WHEEL MOTOR)," 2014.

3. 김영식, 박경배, "높이 가변형 코팅장치 (VARIABLE HEIGHT TYPE COATING APPARATUS)," 2013.

4. 김영식, 박경배, "코팅 겸용 자동 이송장치 (AUTOMATIC CONVEYOR APPARATUS AND COATING)," 2013.

5. 김영식, 박경배, "Frame Links Module (프레임 링크 모듈)," 2014.

6. 신동환, 김영식, 안진웅, 정승민, "다관절식 매니퓰레이터가 장착된 로봇 플랫폼," 2013.

7. 신동환, 김영식, 안진웅, "고관절 구동 다리형 로봇의 논슬립 고관절 토르크 범위 및

로봇 발과 지면 간의 마찰계수 추정 방법," 2012.

8. 신동환, 김영식, 안진웅, "피치 밸런싱 다리형 로봇," 2013.

Patent (Pending)

1. 김영식, 장태호, 이진석, 이무홍, "차량용 안테나 조립체," 2015.

2. 김영식, "가변형 휠-레그 조립체," 2014.

3. 김영식, 장태수, "형상기억합금와이어를 이용한 구체형 이동장치," 2014.

4. 김영식, 장태호, "정밀위치 제어가 가능한 안테나 포지셔너 (AN ANTENNA POSITIONER FOR PRECISEIY POSITION CONTROL)," 2013.

Dissertation/Thesis

-   Youngshik Kim, "Kinematic Motion Control of Compliantly Coupled Multi-Robot Systems Subject to Physical Constraints," PhD Dissertation, University of Utah, August 2008

-   Youngshik Kim, "Control Prototyping System: From DSP to Microcontroller (Case Study: Throwing Robot Arm)," Master Thesis, University of Utah, May 2003.

Invited Presentation

1. "Motion Control of Mobile Robots", Inha University, Inchon, Korea, July, 2011
2. "Kinematic Control of Wheeled Mobile Robots," Agency for Defense Development, Daejon, Korea, January 2008
3. "Kinematic Control of Mobile Robots Subject to Physical Constraints," Robotics Seminar (CS7939), School of Computing, University of Utah, April 19, 2006

Student Advising

Graduate Student Supervisor
Controls and Robotics Lab, Mechanical Engineering, Hanbat National University

1. 장태호 (Taeho Jang), MS Student, Mechanical Engineering, 2013-2015

Advisor for Undergraduate Students
Controls and Robotics Lab, Mechanical Engineering, Hanbat National University

1. 장태수 (Taesoo Jang), Electrical Engineering, 2013-Present
2. 백주혁, Mechanical Engineering, 2015-Present
3. 윤동환, Mechanical Engineering, 2012-Present
4. 김현태, Electrical and Control Engineering, 2014-Present
5. 박정진 (Jungjin Park), Mechanical Engineering, 2013-2015

6. 문기택, Mechanical Engineering, 2013-2015
7. 김수진, Creative Convergence Engineering, 2015
8. 차현미, Computer Science, 2014-2015
9. 우광식, Computer Science, 2014-2015
10. 공영호, Mechanical Engineering, 2014
11. 김현중, Mechanical Engineering, 2014
12. 전상욱, Mechanical Engineering, 2012-2014
13. 신우창, Mechanical Engineering, 2012-2014
14. 장태호 (Taeho Jang), Mechanical Engineering, 2012-2013
15. 조도현, Mechanical Engineering, 2013
16. 권수현, Mechanical Engineering, 2012-2013
17. 김수경, Mechanical Engineering, 2012-2014
18. 박경배 (Kyungbae Park), Mechanical Engineering, 2011-2013
19. 김지웅 (Jiwoong Kim), BS student, Mechanical Engineering, 2011-2013
20. 황진철 (Jincheol Hwang), BS student, Mechanical Engineering, 2011-2013
21. 김재진 (Jaejin Kim), BS student, Mechanical Engineering, 2011-2013

Student Advising/Discussion
Mechanical Engineering, University of Utah
- Kulkarni, Sandip, PhD student, helped analysis of discrete time controls for the Tread Port Active Wind Tunnel (TPAWT), 2007.
- Engeberg, Erik D., PhD student, aided backstepping controller development for a prosthetic hand, 2007.
- Kim, Jungkyu, PhD student, guided design and modeling of micro fluidic channels and structures, 2006-2008.
- Lee, Sungkyu, PhD student, instructed dynamic modeling and analysis in impact hammer testing, 2006.
- Hetrick, Andrew, MS student, helped kinematic modeling of a car-like vehicle, 2007.
- Flickinger, Dan, MS student, "Planning and coordination of mobile robot behavior for medium scale distributed wireless network experiments," 2006.
- Terry, Jared, MS student, guided control of the Compliant Framed Modular Mobile Robot, 2006.
- Vowels, Marty, "Embedded control and autonomy of compliant framed wheeled modular mobile robots", NSF Research Experiences for Undergraduates (REU) Program Student, 2005.

Awards and Certificates

Best Paper Award
KKITS (Korea Knowledge Information Technology Society) Conference, Daejon, Korea, Oct 2014

Travel Funding Awards
- IEEE Robotics and Automations Society (RAS), ICRA 08
- US National Science Foundation (NSF), IROS 06
- Associated Students of University of Utah (ASUU), ICRA 05 and IROS 06

Certificate of Achievement in Oracle Database Administration (DBA)
Oracle Korea Education Center, Seoul, Korea, July 2000

Certificate of Training in Database
KRISS Technical and Information Center, Daejon, Korea, May 2000

First Class Engineer in Construction Equipment
National Technical Qualification Certificate, Human Resources Development Service of Korea, June 1995

Honors Scholarship Awards (Top 1%)
Mechanical Engineering, Inha University, Inchon, Korea, 1995

Tuition Benefit Awards by Rank
Mechanical Engineering, Inha University, Inchon, Korea, 1992-1995

Service Activities

Reviewer
- IEEE Transactions on Robotics
- International Journal of Robotics Research
- ASME Journal of Dynamic Systems, Measurement and Control
- International Journal on Mechatronics
- Journal of Intelligent and Robotic Systems
- IEEE International Conference on Robotics and Automation
- IEEE/RSJ International Conference on Intelligent Robots and Systems

Membership
- IEEE (Institute of Electrical and Electronics Engineers, Inc.), 2004 - Present
- Korean Society for Precision Engineering, 2010-Present
- Institute of Control and Robot Systems, 2010-Present
- Korea Knowledge Information Technology Society, 2014-Present
- Korean Society of Mechanical Engineers (KSME), 2015
- ASME (American Society of Mechanical Engineers), 2004- 2008

University Service
Hanbat National University
- Thesis Committee, Mechanical Engineering, 2011-Present
- Undergraduate/Graduate Admission Officer, Mechanical Engineering, 2011-Present
- Director of Graduate Program, Mechanical Design Engineering, 2014-Present
- Committee for Lab Safety, Center for Research Facilities, 2014-Present
- TFT Committee for Undergraduate Research Program, Mechanical Engineering, 2015
- Committee, General Faculty Council, 2014-2015
- Chair for Dynamics, Solid Mechanics, Controls, and Robotics Division, Mechanical Engineering, 2013-2015
- Department Director for ABEEK (Accreditation Board for Engineering Education of Korea), 2012-2014
- Advisor, MIRACLE team for Baja SAE Korea, 2011
- Department Director for Advanced College of Education (ACE) Program, Winter 2011

Public Service
- Roadmap Committee for Small-Business Companies, Korea Small Business Administration, 2012~2015
- Advisor, LabView Student Club supported by NI, 2012-Present
- Chair, Robot R&BD Planning Council, Daejon TechnoPark(TP), 2014
- Referee and Committee, Baja SAE Korea, 2011
- Committee, Korea Robot Forum, 2011-2013

- Roadmap Committee, Robot Division, Korea Institute of Advancement of Technology (KIAT), 2010
- Committee, Robot Industry Cluster TFT, Daegu City, 2010